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ABSTRACT

Scientization is a process that refers to the mythologies that are generated around the practices of working scientists. This paper discusses how science works on popular consciousness and how particular occupational groups use science to legitimatize their discipline, specifically in physical education. Two examples are presented to illustrate this point. The first relates to trends in the Department of Human Movement Studies in the university system in Australia. The second relates to a lesson on Body Image observed as part of a secondary school physical education program. The lesson focused on the micro-structure of muscle rather than the concept of the social construction of the body-in-culture. Conclusions maintain that the myth of science in secondary and tertiary level physical education programs needs to be deconstructed. (MDH)

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SCIENCE AS MYTH IN PHYSICAL EDUCATION

BY DAVID KIRK

PAPER CONTRIBUTION TO THE SYMPOSIUM: "GIVE ME A LABORATORY AND I WILL MOVE SOCIETY: CRITICAL PERSPECTIVES ON 'SCIENTIFIC' PRODUCTION AND THE CONSTRUCTIONOFSCHOOLKNOWLEDGE.

ANNUAL MEETING OF THE AMERICAN EDUCATIONAL RESEARCH ASSOCIATION, SAN FRANCISCO, 20-24 APRIL 1992

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Science as Myth in Physical Education

Paper contribution to the symposium: "Give me a laboratory and I will move society: critical perspectives on 'scientific' production and the construction of school knowledge.

Annual Meeting of the American Educational Research Association
San Francisco, 20-24 April 1992

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Today I want to address the issue of scientization as a cultural process and, in this context, it's manifestation in school and university physical education curricula. I want to suggest that scientization is a process which refers not so much to the actual practices of working scientists, as to the mythologies that are generated around these practices. At the level of myth, the ways of thinking about the world science is widely held to represent are valued over the actual work scientists do. In this respect, science has become for the ordinary person the modern version of magic; a mysterious force that they can scarcely begin to comprehend, and that they can only look on with wonder and awe.

I am using the term myth quite intentionally here in much the way that Roland Barthes (1957) has suggested. Barthes means by myth an unproblematic way of seeing the world, a perspective we are not fully conscious of and which seems, for all intents and purposes, to be 'natural'. A myth is a way of thinking which is so deeply buried in our collective consciousness that it is, most of the time, invisible. It is in this sense that science is a powerful social discourse, and much of it's power is legitimated and sustained by work in a range of professions. By referring to scientization as a mythical process, I mean to highlight some of the cultural consequences which flow on from the actual activities of scientists. In other words, I am interested in how science enters and works on popular consciousness and how this process frames uses of science as a means of professional legitimation by particular occupational groups. My point of focus in this paper is physical education.

Since the 1940s in Australia, North America, Britain, and other European countries, physical education has been in the process of reconstruction and redefinition, as much by the mythologies as the practices of science. Physical educators have applied scientific procedures to their work and have played a part in helping generate whole new fields and sub-fields as a result, such as exercise physiology, biomechanics and motor learning theory. Additionally, in North America, scientific procedures have been applied with particular enthusiasm to the analysis of teaching and learning in physical education. In all of this work, 'scientific physical educators' have been impressed by the apparently immutable fact that learning in physical education is open to scientific measurement since it is displayed in the form of overt physical activity and so is 'observable'.

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The impact of science on the aims, content and pedagogy of physical education was seen first at the level of university undergraduate and graduate degree programs. More recently, school physical education programs have also begun to be reconstructed along the lines of university programs. In both cases, there have been two notable interrelated trends: first, a trend replacing physical activity by 'theoretical' knowledge; and second, a trend valuing bio-physical, scientific knowledge over socio-cultural knowledge.

A number of questions can be raised about the possible consequences of this scientization of physical education and its reconstruction and redefinition. At one level, it is appropriate to ask why this process is occurring at this time and in this manner, and where it is occurring. What other cultural movements are interconnected with changes in physical education, and what might be the social, political and cultural significance of these changes? It might also be appropriate to ask whose interests are being served through this reconstruction of physical education. To what purpose(s) is the new scientific knowledge being used: for the enhancement of elite sports performance and the production of gold medal winners? for the production of healthier citizens and workers? to combat disorders such as anorexia and bulemia nervosa, chronic dieting and excessive and injurous exercising? for individual and social empowerment? Finally, questions might be raised about who should have the right to define the aims, content and pedagogy of physical education, and whether professionals inducted into scientific, bio-physical ways of viewing their activities are able to think reflexively on the social, political and cultural effects of their actions.

These questions, I believe, set a fairly broad agenda for critical examination of physical education and its scientization, an agenda which has begun to be addressed elsewhere (cf. Kirk, 1990; McKay, Gore and Kirk, 1990; Schempp, 1987; Whitson and Macintosh, 1990). Rather than conducting a formal analysis of this literature here, and bearing in mind the practical boundaries of time and interest framing this symposium, I wish to recount two specific examples drawn from my own experience as means of illustrating some of the social, cultural and political consequences of the scientization of physical education.

The first example relates to trends in the university system in Australia, trends which have followed events in the Unites States (eg. Lawson, 1991). Between 1984 and 1989, I was a member of the staff of the Department of Human Movement Studies at the University of Queensland, teaching and researching physical and health education curricula. In 1986, the University initiated a program of reviews of departments, their agenda quite openly one of rationalisation of resources. Human Movement Studies was the second department to be reviewed and, ironically, the second last also - the University found most of its departments

were actually underfunded and was forced to resource them at an appropriate level. This soon put a stop to talk of reviews and rationalisation! But in the process, the Department of Human Movement Studies underwent some massive upheavals at both structural and personal levels.

Before the review, Human Movement Studies offered degree programs through the Faculty of Education and the programs were constituted by a broad range of science and humanities subjects, vocational training for physical education teaching being integrated with this program. This situation created many tensions, with the scientists lamenting over a long period of time that they lacked the funding, facilities and equipment to run proper science courses in biomechanics, exercise physiology, motor learning and sports psychology. The teacher educators, myself among them, complained that supervision of off-campus school teaching practice and on-campus mini and micro teaching experiences were not the same thing as laboratory work, and needed to be resourced differently, particularly in terms of staffing. And the humanities and social sciences people bemoaned the fact that many of the students were ill-equipped to benefit from their teaching since, from the students' point of view, it seemed to have little obvious vocational or practical application to teaching, coaching, performance enhancement, and talent identification. Many of these tensions had their source in quite profound philosophical differences between staff which reflected the multi-disciplinary nature of the Department's work.

The review brought many of these and other tensions to the surface. Before the review, the myth of scientific physical education had been a source of inspiration for all of the scientists and some of the teacher educators and social scientists in the Department, an ideal that might one day be realised. But none of these people would have contemplated the radical restructuring which took place through the review. The review committee, including two external members who were both exercise scientists (one from North America), one member whose field was experimental educational psychology, and another who was a biochemist, were impressed by many of the Department's members' enthusiasm for science, and by the potential to tap the emerging exercise management and elite sports performance markets, and so to earn external money for the University in the process. Their recommendations, which were quickly acted upon, were to relocate the Department in the Science Faculty, to offer new degree programs in Science and Applied Science, and to appoint a new Chair of exercise science.

The consequences of these decisions soon became apparent, as the myth of scientific physical education seemed to become a reality. While there was no overt attempt to remove members of staff who were not scientists, tenure and promotion conditions within the

Faculty of Science soon made it obvious to non-scientists that their career advancement would be difficult (eg. books didn't count, refereed papers did; social science, education and humanities journals were weighted lighter than science journals; the nature of non-science research itself, involving non-experimental, qualitative and other modes of data collection, was regarded with deep suspicion, etc., etc.). I left the Department and the University just as the shift to Science was about to commence, late in 1988. Another colleague relocated in the Sociology Department at the University. The replacement for the sociologist was an exercise scientist. The curriculum of the program changed. Students could only study humanities and social science subjects as electives, and no major studies in these fields were possible. Students enrolling in Human Movement Studies programs, including those who would eventually become physical education teachers, required prerequisite studies in science subjects at senior high school level.

The Department of Human Movement Studies at the University of Queensland is now thriving. Gone are the days of tension, conflict and poor funding. For some people associated with these events, there has been a natural process of maturation characteristic of any neonate discipline, and human movement studies has finally won its rightful place as a scientific field of research and study. For others, myself included, the episode may more accurately be seen as a case of seduction by the mythology of science rather than a logical progression based on epistemological necessity. It is certainly not clear to me that better physical education teachers are now being trained through the new Bachelor of Applied Science program. Nor is it obvious that immersion in more physics, biochemistry and physiology, and little or no time spent in philosophy, psychology, sociology, history and cultural studies is going to adequately prepare young teachers for the realities of life in classrooms, in the gym and on playing fields.

My second example relates to school physical education, and is drawn from an episode I witnessed while engaging in fieldwork for a recently completed study of 'School Physical Education and Media'[1]. The episode occured in a school in the Australian state of Victoria, where a new upper secondary school program, the Victorian Certificate of Education (VCE) has recently replaced the Higher School Certificate (the HSC). It goes some way towards illustrating the kinds of difficulties physical educators as a professional group will continue to have as they are further seduced by the myth of scientific physical education.

Picture a class of twenty male and female students, mostly fifteen and sixteen year olds, in a lesson on Body Image, which is a compulsory component of their Year 11 course in

[1] The School Physical Education and Media Project was conducted in 1990-1991 by Lindsay Fitzclarence, David Kirk and Richard Tinning, with the assistance of Heather Cooney and Jill Warneke. Funding was provided by the Australian Research Council and Deakin University, which is gratefully acknowledged.

Physical Education. The lesson begins with the teacher, a degree-qualified and experienced physical educator, drawing a stylised representation of a muscle on the blackboard. I recorded in my notebook as I watched that this was a novel way to make an entree to the topic of body image. But I was also aware that this was only the class's third lesson on the subject, and that the concept of the social construction of the body, of the body-in-culture, is a difficult one to grasp. I thought, as I watched on, that the teacher was about to build on this one muscle to talk about shape, size, configuration and what these aspects of anatomy mean in relation to body shape and image.

To my mild surprise, she then began to discuss muscle fibre, it's varieties and their functions. My confusion grew as she continued to delve deeper into the micro-structure of the muscle. Long before she reached the part in the hour-long lesson devoted to the biochemistry of sliding-filament theory, I had concluded that the program had been changed, classes swopped around, and that for some reason Year 11 were having an anatomy lesson. As the class finished, I approached the teacher to have my usual two minute de-brief before she ran off to teach another class. I made the comment that I'd hoped to see the lesson on body image that day since it was consistent with the theme of our research project. She replied, rather defensively, that it <u>was</u> a lesson on body image, 'why, what was the problem?'. 'Oh', I hesitated, now cautious, realising at once that I'd put my foot in it, 'its just that I was expecting you to cover the social significance of body shape or some material on how the body gets represented on television or in magazines, or perhaps a bit about Sheldon and body type'. 'Hmm, well I'm not sure about this topic, you know, being the new course and all' she said. 'You know, I don't really have any notes on this from the HSC, and there's not much in the textbook on that sort of stuff.' Later, I thumbed through the textbook she had been using, only recently published for this new VCE Physical Education course. Sure enough, there, in the chapter headed Body Image, was a section on the micro-structure of muscle. Ironically, and in some respects tragically too I believe, our research in this particular school uncovered widespread anxiety among female and male students created by their perceptions of their own physical inadequacies, much of this centred on the divergence of their body shapes from the idealized images fed to them constantly through the mass media.

What do these two examples tell us about the scientization of physical education and, more broadly, about the process of scientization itself? On the basis of the first example, I believe the process of scientization to be well under way in tertiary physical education programs. It is at this level that the practices and the mythology of science have been most thoroughly appropriated, as a means of defining physical education and justifying it's existence. Many tertiary physical educators teach exercise physiology, biomechanics and anatomy subjects,

some even conduct research in these areas. It seems to them entirely natural that bio-physical science forms the foundation of knowledge in physical education. The Department of Human Movement Studies' shift from the Faculty of Education to the Science Faculty at the University of Queensland seemed to most of the staff to be a natural progression, a straightforward extension of existing programs.

Traces of the filtering down of tertiary physical education's appropriation of scientific discourse can be seen in the second example, where the teacher's instincts were to fall back on what she felt most comfortable with when confronted by a new and unfamiliar set of concepts and subject matter relating to representations of the body in culture. Indeed, it is at the level of instinct, of what feels right, that any process of mythologization works most effectively. I'm not suggesting that physical education teachers believe themselves to be doing science when they teach physical education. But I would argue that they believe the subject matter which forms the core of their professional stock of knowledge to be 'scientific'. Some secondary school physical educators, if pushed, might be prepared to label their activities 'applied science'. Most, unreflectively, would almost certainly assume that the discipline of physical education can be, ought to be, or some day will be, an applied science. The effects of such assumptions are to delimit the range of knowledge and expertise physical education teachers are prepared to take seriously. Part of the teacher's discomfort with the topic of body image, she later admitted (in an interview), was that 'it is all so subjective! How can you assess students on body image, when it's all about their own bodies and their opinions of what particular shapes mean?'. Somehow, this teacher (and many others like her) have learned, through absorption of the myth of scientific physical education, that anything which can't be measured using numbers, which can't be clearly defined, and which can't be observed directly, is 'mere opinion, unreliable, individualistic and idiosyncratic', in a word, subjective.

It is cases such as this, where the range of legitimate and admissible knowledge is arbitrarily delimited, that scientization as a broader cultural process is a source of concern. There can be little doubt that science as myth is highly valued in Western society, a fact that can be seen most readily in the success of television science shows. While there are pockets of animosity towards science in some of its forms from a range of diverse interest groups, from Greens to Right-To-Life, the mythology of science constitutes a powerful social discourse. Ironically, as many practising scientists can confirm, this acceptance of the worth of science does not extend to investment and economic return in their chosen careers. Perhaps scientists themselves now need to be paying more attention to demythologising science and in the process circumventing the social, cultural and political consequences which are constitutive parts of scientization. If, in the short term, some of the wonder and awe evaporates as our

populations become better science educated, then perhaps this is a price scientists will be willing to pay for longer term recognition of the realities of science and its real, tangible benefits. Certainly, in physical education, I feel the myth of science needs to be deconstructed in secondary and tertiary level physical education programs and with it, some of the oppressive social practices - such as the enhancement of elite sports performance at the expense of sport for all, or the use of health and fitness programs for economic gain rather than, primarily, for individual and collective empowerment - which the mythology helps mask, sustain and legitimate.

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